I claim:

1. An accumulating conveyor comprising:

a first plurality of zones, the zones capable of being separately driven in order to accumulate or transport cartons;

a sensor disposed within each of the first plurality of zones for sensing the presence of a carton within the zone;

an actuator that allows movement of the sensor between an up position wherein the sensor is capable of contacting the cartons and a down position wherein the sensor is not capable of contacting the cartons;

wherein the actuators are adapted such that when the conveyor switches from an accumulation mode to a transportion mode each actuator provides a signal to an adjacent, upstream zone to begin conveying cartons only when the zone senses the absence of a carton within the zone.

2. The conveyor of claim 1 wherein the actuator comprises two pistons disposed within a cylinder housing wherein the first piston comprises a stem and a bore the stem being capable of operating the sensor and the bore being capable of receiving a stem of the second piston, the two pistons defining a central chamber, the second piston being capable of operating a valve attached to the piston.

3. The conveyor of claim 3 wherein the valve comprises a valve stem movable between an on position and an off position, wherein in the on position a signal is transmitted to an upstream zone to start the upstream zone conveying cartons and in the off position the signal is removed.

4. The conveyor of claim 3 wherein the sensors are held in the down position except when the conveyor is accumulating and an adjacent downstream sensor senses the presence of a carton in an adjacent downstream zone.

5. The conveyor of claim 4 wherein the actuator has three modes:

a first mode wherein the sensor is forced into the up position by a spring and wherein the first and second pistons are forced to the bottom of their travel within the cylinder housing and the valve stem is pushed to the on position by the second piston;

a second mode wherein the first piston is forced to the top of its travel and holds the sensor in the down position and the second piston is forced to the bottom of its travel and holds the valve stem in the on position; and

a third mode wherein the sensor is held in the down position by a carton and the valve stem is biased to the off position and forces the first and second pistons to the top of their travel.

6. The conveyor of claim 5 wherein when the actuator is in the third mode an air inlet within the cylinder housing is blocked by the second piston.

7. The conveyor of claim 1 further comprising:

a second plurality of zones;

a sensor disposed within the second plurality of zones;

a dummy actuator disposed within the second plurality of zones that allows movement of the sensor between an up position wherein the sensor is capable of contacting the cartons and a down position wherein the sensor is not capable of contacting the cartons;

wherein the dummy actuators are adapted such that when the conveyor switches from an accumulation mode to a transportation mode each dummy actuator provides a signal to an adjacent, upstream zone to begin conveying cartons immediately upon receiving a signal from an adjacent, downstream zone to begin conveying cartons.

8. The conveyor of claim 7 wherein zones of the first plurality of zones and zones of the second plurality of zones are alternated.

9. The conveyor of claim 7 wherein zones of the first plurality of zones are provided every third zone and zones of the second plurality of zones comprise the remaining zones of the conveyor.

10. A method of controlling a conveyor comprising the steps of:

dividing the conveyor into a plurality of zones, wherein each zone is capable of being separately driven in order to accumulate or transport cartons;

providing a sensor for each zone, each sensor capable of sensing the presence of cartons within the zone;

holding the sensor in a down position where the sensor is not capable of contacting a carton when the conveyor is not accumulating cartons and

while accumulating cartons when an adjacent, downstream sensor does not sense the presence of a carton within the downstream, adjacent zone; and

holding the sensor in an up position where the sensor is capable of contacting a carton only when the conveyor is accumulating cartons and an adjacent, downstream sensor senses the presence of a carton within the downstream, adjacent zone.

11. The method of claim 10 further comprising the step of:

switching from an accumulation mode where cartons have accumulated on the conveyor to a transportation mode where accumulated cartons are by conveying cartons from a zone only when an adjacent, downstream zone does not sense the presence of a carton within the adjacent, downstream zone.

12. The method of claim 10 further comprising the steps of:

dividing the conveyor into a second plurality of zones, wherein each zone is capable of being separately driven in order to accumulate or transport cartons;

providing a dummy sensor disposed within each zone of the second plurality of zones;

holding the dummy sensor in a down position where the sensor is not capable of contacting a carton when the conveyor is not accumulating cartons and while accumulating cartons when an adjacent, downstream sensor does not sense the presence of a carton within the downstream, adjacent zone;

holding the sensor in an up position where the sensor is capable of contacting a carton only when the conveyor is accumulating cartons and an

adjacent, downstream sensor senses the presence of a carton within the downstream, adjacent zone

in each of the second plurality of zones, sending a signal to an adjacent, upstream zone to begin conveying cartons immediately upon receiving a signal from an adjacent, downstream zone to begin conveying cartons.

13. The method of claim of claim 12 wherein zones of the first plurality of zones and zones of the second plurality of zones are alternated.

14. The method of claim 12 wherein zones of the first plurality of zones are provided every third zone and zones of the second plurality of zones comprise the remaining zones of the conveyor.

15. An actuator comprising

a cylinder housing having a top and a bottom and a cylinder cap attached to the top of the cylinder housing, the cylinder cap defining a central bore;

a first piston disposed within the cylinder housing comprising a first piston stem that is received within the central bore;

a second piston disposed within the cylinder housing comprising a second piston stem, the second piston stem capable of contacting the first piston, wherein the first and second pistons divide the cylinder housing into a first chamber, a second chamber and a third chamber;

a valve attached to an end of the cylinder housing, the valve comprising an input, an output and a valve stem wherein the valve stem

contacts and is capable of being operated by the second piston to block airflow from the input to the output; and

an air inlet within the cylinder housing which communicates with the second chamber when the first piston is forced to the top of the cylinder housing and the second piston is forced to the bottom of the cylinder housing.

16. The actuator of claim 15 wherein the first piston comprises a first piston bore for receiving the second piston stem therein.

17. The actuator of claim 15 wherein the first piston and second piston each further comprise sealing members.

18. The actuator of claim 15 wherein the air inlet is positioned such that when first and second pistons are forced to the top of the cylinder housing, the air inlet is blocked by the second piston until the first and second piston is forced to the bottom of the cylinder housing.